

HART (J. I.)

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## DISEASES OF THE ANTRUM.

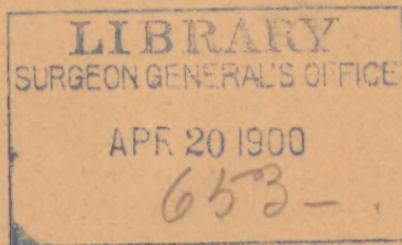
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BY JOHN I. HART, D.D.S., NEW YORK, N. Y.

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(Read before the Dental Society of the State of New York, at Albany, N. Y., May 15, 1890.)

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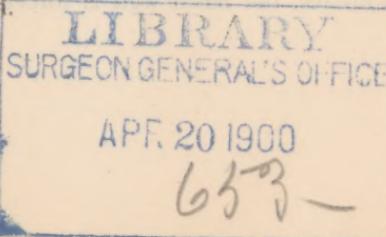
## Diseases of the Antrum.

By JOHN I. HART, D.D.S., NEW YORK, N. Y.

MR. PRESIDENT AND GENTLEMEN :

THROUGH the courtesy of your Committee I have the pleasure of addressing you at the present session, the subject of my remarks being "The Antrum of Highmore, and some of its Diseases." The antrum of Highmore, or maxillary sinus, is the large air-cavity situated in the body of the superior maxillary bone. Above is the floor of the orbit, internally is the nasal wall, below the alveolar process. With the possible exception of the alveolar process, its walls are exceedingly thin, its roof being formed by the orbital plate, its floor by the alveolar process, its anterior wall by the facial surface, and its posterior wall by the zygomatic plate.

Its development is similar to the sinuses on the frontal bone, and like them is not completed until after the age of puberty, although it makes its appearance as early as the fifth or sixth month of foetal life; consequently, in early life, the surrounding walls are thicker than in the adult. Its inner wall or base presents a large irregular aperture which communicates with the nasal fossa through the middle meatus of the nose. The margins of this opening are thin and ragged, and the aperture itself is considerably contracted by its articulation with the ethmoid above, the inferior turbinated below, and the palate bone behind. This aperture being situated near the upper part of the antrum, does not afford, when the head is perpendicular, a ready outlet to fluids collected within the cavity. The floor of the antrum is marked by irregular eminences corresponding to the roots of the molar teeth. Sometimes it is punctured by the roots of these teeth, which may extend into the sinus, when the roots are only covered by the mucous membrane of the antrum.



The walls of the maxillary sinus often support thin plates of bone, which subdivide it into small compartments. A knowledge of this fact is important in operating in this location, as the drill may penetrate one of these compartments, misleading the operator as to the extent of the cavity. The mucous membrane lining the sinus is ciliated, and is continuous with the membrane lining the nasal cavity, the frontal, ethmoidal, and sphenoidal sinuses, and for that matter, with the general gastro-pulmonic tract. Normally, it is less vascular, and thinner than the nasal mucous membrane. The posterior wall is penetrated by the posterior dental canals, through which the posterior dental vessels and nerves are conducted to and from the teeth ; the anterior wall is tunneled in a similar manner for the anterior dental vessels and nerves.

It varies in size and capacity (from one to six ounces), and is larger in the male than in the female. It atrophies in old age and from the loss of teeth. The two antra may be of unequal size.

The most frequent sources of difficulties are those arising from lesions secondary to the diseases of the teeth, and affections common to mucous membrane, wherever situated ; yet it is essential to recognize that even those diseases regarded as the least dangerous, and which may yield most readily to treatment, when instituted during their incipient or earlier stages, may assume, when neglected or improperly treated, a form so aggravated as to bid defiance to the skill of the operator. Thus the most simple affections of this cavity may, through carelessness, become finally chronic, and many which are considered the most dangerous may by timely treatment be effectually cured.

Suppuration of the antrum, or, as it is sometimes termed, abscess, is ordinarily the result of inflammation extending from the teeth to the lining membrane of the cavity. As we have noticed that the roots of some molars penetrate, and that all are but slightly separated from the floor of the antrum by a thin septum of bone, we can easily recognize how the ordinarily carious tooth may develop a pulpitis, finally pulp death, suppuration ensuing, and the discharge pass through the apices of the roots into the antrum.

If the irritation is from the adjacent teeth, the pulpitis may result in a maxillary abscess, which may then extend into the antrum. Symptoms of antral abscess are at first a dull, aching pain, and as the disease progresses, infra- and supra-orbital neuralgia with redness and swelling, a chill usually indicating the time of pus-formation. As the pus accumulates, the nasal wall is forced toward the septum, and when

the patient is reclining on the side not affected, a slight flow of pus into the nostril may result. An offensive odor is detected by the patient, and on blowing the nose a purulent discharge is perceptible, and when lying down the discharge finds its way into the throat. From the constant swallowing of purulent fluid during sleep, for any considerable length of time, injury is done to the digestive organs, nutrition is incomplete, and their usefulness impaired. The patient is complaining, lacks appetite, and the ordinary remedies for gastric difficulties are of no benefit while the condition of the antrum is unrecognized, and consequently not treated.

The treatment of suppuration of the antrum consists in the evacuation of the retained matter, the removal of all local and exciting causes of irritation, and finally the restoration of the lining membrane to its normal condition. The first molar being directly beneath the most dependent part of the sinus, is the most suitable tooth to be removed, if carious ; if it be sound, the second molar or either of the bicuspids, if carious, may be extracted in its stead, and in fact no tooth beneath the antrum in an unhealthy condition should be permitted to remain. If necessary, after the extraction of the tooth, the socket may be somewhat enlarged by means of a trephine in the engine.

Some operators prefer, if the teeth are not decayed on the side affected, puncturing just above the alveolus, claiming that the aperture is less apt to close, and because food is not so liable to find its way into the antrum ; but when the opening is made from the palatal surface of the antrum, and properly guarded, no difficulty is experienced in keeping it free from food, and the cavity is much more readily cleaned.

Whatever the method employed for emptying the antrum, it is important that the cavity should be thoroughly cleaned by means of warm salt water (a teaspoonful of salt to a half-pint of water) until free communication is established with the nostril. For this purpose the ordinary pipe syringe is not efficient, and one should be employed with perforations at the side of the pipe, near its extremity, instead of a single orifice at the end, thus forcing the medicines employed all over the cavity, and not against a single point.

After thoroughly cleansing with the salt water, some detergent and slightly astringent lotion should be regularly injected to restore the health of the parts. The following are a few of the many preparations in use : permanganate of potassium, 2 grains ; water, one ounce ; listerine ; carbolic acid, one dram ; glycerine, one dram ; water, eight ounces ; saturated solution boracic acid with water.

Too frequent injections, and those of too stimulating a nature, are often employed ; this should be carefully guarded against, by making them at first weak, and afterward increasing their strength as occasion may require. If the perforation has been made through the socket of a tooth, the antrum should be guarded by plugging the opening with cotton wool, saturated with carbolized oil (one part carbolic acid, fifteen parts oil of sweet almonds); this is retained in position by attaching to a tooth or a plate worn in the mouth, or, as suggested by Salter, by fitting a plate to the mouth with a small tube to fill the aperture, which can be corked at will, and serves as an opening for injection.

If no improvement is apparent after some days, the antrum should be syringed with the carbolic solution just mentioned, with the addition of one dram of tincture of iodine. As the discharge decreases, the opening made is gradually permitted to close, using smaller tents after each treatment. If the antral trouble is the result of constitutional disease, appropriate remedies should be used, as well as the local treatment.

Catarrh of the antrum usually coexists with catarrh of the Schneiderian membrane. A patient takes cold, the nasal mucous membrane becomes inflamed, and by simple continuity of surface the lining membrane of the antrum becomes affected. If the inflammation is sufficient to cause a closing of the connection, then the mucus is retained in the antrum, and this will, sooner or later, act as a source of irritation. This condition is rarely met with, as the congestion is seldom sufficient to obliterate the connection, and consequently the discharge is poured into the nasal cavity, and not confined in the antrum. It has been so severe, however, as to cause ozaena, an ulceration of the pituitary membrane of the nose. In the mild stages, a saline cathartic will usually reduce the congestion. Where the disease has advanced to engorgement, and the antrum is enlarging, it becomes necessary to direct treatment to that cavity. The manner of accomplishing this has been described under abscess of the antrum.

Dropsy of the antrum, or hydrops-antritis, is marked by a gradual painless distension of the walls of the antrum. The old explanation of these phenomena was, that the aperture between the antrum and the nostril having become obstructed, the mucous secretion was thought to be retained, and by its gradual accumulation to produce the symptoms mentioned. Bordenae, in his "Observations on Diseases of the Maxillary Sinus," gives details of probing and injecting through the nasal orifice ; but after showing that there is great difficulty and uncertainty in finding the natural orifice, remarks that "there are few cases in

which the employment of injections through the natural openings would effect a complete cure." Some of these cases, and probably all of them, originate in the growth of a cyst, where it is unilocular, or in cysts, where they are multilocular, within the antrum, which either grow to such a size as to be mistaken for the cavity of the antrum, when opened, or break into the antrum by absorption of the cyst wall, so that on subsequent examination no evidence of cyst-formation can be discovered.

This explanation, as pointed out by Coleman, is supported by the fact that in cases of hydrops-antri the contained fluid in no respect resembles ordinary mucus, but is invariably a clear yellow fluid, frequently containing cholestrum.

Epithelioma of the antrum may involve considerable surface before its discovery, and it is difficult to eradicate. It has been discovered in France under the name epithelioma tetetraut.

A molar may become loose, and on being extracted the antrum is found to be lined with epithelioma growth, or a wart appears on the hard palate, which is gradually destroyed, permitting the finger to pass into an antrum, the walls of which are of malignant growth. This variety of growth is met with in people of middle or advanced life. The treatment is necessarily radical: either the jaw must be removed, or the morbid growth scraped, and strong escharotics applied.

Polypus of the antrum is closely connected with cystic growths of the same cavity, and is doubtless due to hypertrophy of some elements of the mucous and submucous tissues. According to Heath, "when the connective or areolar tissue predominates, the fleshy polypus is produced; when the glandular element is affected, we have the cystic form produced." Polypi of the antrum are very vascular, and consequently bleed freely when interfered with. The most common situation of the polypus is the nasal wall. It is usually unrecognized until the growth is sufficient to encroach upon its surroundings. Osseous tumors are also met with in the antrum.









